INFLUENCE OF CARNOSINE ON THE CARDIOTOXICITY OF DOXORUBICIN IN RABBITS

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The aim of this study was to establish the effect of naturally occurring antioxidant carnosine (CAR) on the doxorubicin (DOX)-induced cardiotoxicity in a rabbit model. For this purpose, we evaluated the influence of DOX administration alone and in a combined therapy with CAR on the hemodynamic parameters and on the degree of cardiac muscle cell alterations in rabbits. Thirty one chinchilla rabbits were divided into four groups. One group of rabbits was injected iv with DOX at a dose of 2 mg kg–1 weekly for 7 weeks to induce congestive heart failure. Another group of rabbits received the same doses of DOX simultaneously with CAR at a dose of 100 mg kg–1 po daily for 9 weeks. Administration of CAR started 1 week prior to the first dose of DOX and ended one week after the administration of the last dose of DOX. The control groups of animals received 0.9% NaCl and CAR alone. The following hemodynamic parameters were estimated: heart rate (HR), mean arterial pressure (MAP), cardiac index (CI), stroke index (SI) and total peripheral resistance (TPR). Registration of the hemodynamic parameters in rabbits was performed by Doppler method (Hugo Sachs Elektronik Haemody). CAR normalized the values of MAP in rabbits receiving DOX and increased the values of CI and SI. The influence of CAR on TPR was not statistically significant, but there was a decreasing tendency. The degree of cardiac muscle cell alterations was examined by light microscopy using Mean Total Score (MTS) technique. The histopathological studies revealed smaller damage of cardiac muscle in rabbits which received DOX with CAR in comparison to animals receiving DOX alone. CAR seems to be cardioprotective during DOX administration.

Key words: doxorubicin, cardiotoxicity, hemodynamic parameteres, histopathological changes, carnosine, cardioprotection

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